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ABSTRACT

Senior medical students at the University of Arkansas for Medical Sciences were surveyed regarding the value of a program providing regression based predictions of their individual Day 1, 2, 3, and Total Federation Licensure Examination (FLEX) scores and the probability of passing the FLEX for subsequent Arkansas licensure. The prediction formulas were based on previous classes' scores on the National Board of Medical Examiners clinical subtest, FLEX, and grade point average. Predictive validity for the FLEX was .78 to .83, and for the daily examinations, .61 to .82. After the students received their predictions, practice versions of the FLEX and the third daily examination were offered in small group sessions on a voluntary basis. Of 105 students who completed the survey, 68 percent indicated concern about the FLEX; the prediction was useful in reducing this concern. Eighty-nine percent of the students supported the continuation of the prediction. Practice testing sessions were useful in determining how much and what to study. Both predictions and practice were most useful to those students who felt at highest risk. Continuation of the practice sessions was recommended by 85 percent of the respondents. (The questionnaire is appended.) (GDC)

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# Counseling Medical Students Preparing for Their Licensure Examination: Students' Evaluation of the Program's Usefulness[1]

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Each academic year since 1979-80, UAMS Senior Medical students have been provided regression based predictions of their individual Day 1, 2, 3, and Total Federation Licensure Examination (FLEX) scores, the 95% Confidence Interval for each score, and the probability of passing the FLEX for subsequent Arkansas licensure. Predictive validities for the FLEX Total have been good ($.78<r<.83$). Day score validities have been lower ($.61<r<.82$). After the predictions were given to students, practice versions of the FLEX were offered in small group sessions on a voluntary basis. Although informal feedback from students and the increasing number of students choosing to participate in the practice sessions indicated the program was useful, no formal evaluation of the program had been completed. The objectives of this study were to determine the degree to which the FLEX predictions and practice sessions were viewed as useful and worth continuation in the opinion of the students. In a group session attended by all current seniors (N=131), a 21 item questionnaire was given to the students requesting their voluntary evaluation of the program. One hundred and five students completed and returned the survey. Sixty-eight percent of the respondents indicated they had some concern or anxiety about the FLEX. The predictions greatest value was in reducing this concern. Eighty-nine percent of the respondents recommended continuation of the predictions. FLEX practice sessions were seen as most useful in determining how much and what to study, although the Day 3 (PMP oriented) practice session was helpful in all three respects. Both predictions and practice sessions were most useful to those students who were or who viewed themselves as being most at risk. Overall, 85% of the respondents recommended that the practice sessions be continued. The results make clear that the students believe both components of the program are valuable, helpful, and should be continued.

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# Counseling Medical Students Preparing for Their Licensure Examination: Students' Evaluation of the Program's Usefulness[1]

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Each academic year since 1979-80, UAMS Senior Medical students have been provided regression based predictions of their individual Day 1, 2, 3, and Total Federation Licensure Examination (FLEX) scores, the 95% Confidence Interval for each score, and the probability of passing the FLEX (i.e., making a Total of 75 or greater) for subsequent Arkansas licensure. Because each Day's exam emphasizes different aspects of medical education and competence, the separate predictions may provide the student with at least an idea of his or her areas of relative strength and weakness. Each year the prediction formulas were based on the previous year's Seniors' performance on the National Board of Medical Examiners' clinical subject exams, three year College of Medicine cumulative GPA, and FLEX. Predictive validities for the FLEX Total for 1981-84 were .80, .79, .82, and .82. Validities for Day scores were between .62 and .81 with Day 3 validities consistently lowest. (All validities different from zero at $p < .01$). Details of the regression procedure and results have been reported in a previous publication (Cason and Schoultz, 1984). After dessimination of FLEX predictions, commercially published practice versions of the FLEX (April, 1982) were administered to interested students on a voluntary basis in small group (N=20-30) sessions.[2] These sessions included discussion of review strategies for those students wanting such information. Special emphasis was given to strategies for approaching the Day 3 PMP-type exam because of its generally unfamiliar format and special responding requirements.

The objective of this study was to determine the degree to which the FLEX predictions and practice sessions were viewed by the students as useful and worthy of continuation.

## Method

In a group session (i.e., Match Day) attended by all current Seniors (N=131), a questionnaire which asked for the student's voluntary evaluation of the various components of the FLEX counseling and preparation program was given to each student (See Appendex). Students could respond annonmyously but they were asked to provide their names on the questionnaires so that their answers could be analyzed with respect to their performance on the FLEX.

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[2]During the Falls of 1980-1983 James D. Hand, Ph.D. (now at University of Illinois College of Medicine at Rockford) conducted the FLEX practice sessions. In the Fall of 1984, Judy Garrett, Ph.D., Director, Office of Educational Development, UAMS, conducted the practice sessions.

## Results

Of the 131 seniors, 105 (80%) completed and returned the questionnaire. all further results discussed below are based upon the survey respondents. Table 1 provides detailed tabulations of the responses to the survey questions regarding how concerned the students were prior to receiving FLEX predictions; and, how helpful the FLEX predictions were in determining how much and what to study and in reducing concern about taking the FLEX.

Insert Table 1 about here

The majority of the respondents (68%) were at least somewhat concerned about taking the FLEX. Twenty-three percent were very concerned. Almost half (47%) indicated the predictions were of some help in deciding how much to study but less than a quarter found them useful in deciding what to study and 17% found them unhelpful in deciding what to study. Very nearly 3/4 of the respondents found the FLEX predictions somewhat or more helpful in reducing their anxiety regarding taking the FLEX. A small but appreciable minority (10%) found them unhelpful. The overwhelming majority (89%) recommended that providing FLEX predictions be continued.

Of those students who responded to the questionnaire, about a third attended the practice sessions for Days 1 and 2 of the FLEX while 2/3 attended the patient management problems Day 3 practice sessions. Table 2 provides detailed tabulations of the responses to survey questions regarding how helpful the practice sessions were in determining how much and what to study and in reducing concern about taking the FLEX.

Insert Table 2 about here

Each practice session was viewed as helpful in deciding how much to study for the FLEX by the great majority (about 80%) of those attending each of the three sessions. Similarly, a slightly smaller majority (about 70%) found each of the practice sessions useful in deciding what to study. The practice sessions were least successful in reducing anxiety associated with the upcoming FLEX. This was particularly the case with the Day 1 practice session where only 48% of the attendees found it somewhat or more helpful in reducing anxiety. Across all those electing to attend FLEX practice sessions, the vast majority (85%) asserted that the sessions should definitely be continued. A very small minority (4%) were equally sure that the sessions sould be discontinued.

Of the 105 respondents, 93 students (89%) provided information regarding the total time they engaged in systematic review for the FLEX ( other then the practice sessions). The average student invested 35.79 hours but there was vast variability (s.d.= 66.91; skewness=4.7; kurtosis=26). contributing to the large variability were those students reporting zero hours of preparation.

Insert Table 3 about here

Thirty-one of the 105 respondents elected to voluntarily provide their names on the returned survey questionnaire. Table 3 provides means and standard deviations of medical school third year cumulative GPA, and predicted FLEX Day 1, 2, 3, and total scores. (Actual performance on the

FLEX examination had not been reported to the medical school, even though individual students knew their scores, and therefore could not be included in these analyses.) As can be seen from Table 3 both with respect to GPA and predicted performance on the FLEX, those respondents electing to provide their names systematically had slightly higher scores on all of the measures.

Insert Table 4 about here

Table 4 reports the correlations between the scaled value of the responses given to each item in the survey with the respondent having given their name (1=name; 0=no name). In 5 cases those students providing their names responded differently from those who did not provide their names. These correlations indicate that those providing their name

a. were less concerned about taking the FLEX before they received predictions

b. found the predictions less helpful in reducing their concern about taking the FLEX

c. Participated in fewer practice sessions particularly in the case of Day 3; and,

d. were proportionally less likely to endorse continuing the practice sessions.

The sytematic differences between those who chose to provide their names on the survey and those who did not renders any further analyses of those providing their names essentially useless.

## Discussion

During the period Fall 1980 to Fall 1984 a steadily increasing number of students have chosen to participate in the volunteer FLEX practice sessions (N=69,83,86,97,99). This increasing voluntary participation is consistent with the overwhelming endorsement provided in the survey results for both components of the counseling program. The program was most helpful to those students who were or believed themsleves to be at greatest risk. Those students who voluntarily identified themselves on their survey questionnaire, on average, had higher GPA and predicted FLEX scores. Therefore, it was not surprising that they were less concerned about the FLEX, participated in the practice sessions less, and were somewhat less likely to recommend continuation of the program. While the FLEX predictions were viewed as helpful in determining how much to study, they were most helpful in reducing student concern or anxiety about taking the FLEX. By contrast, the practice sessions were most helpful in suggesting how much and what should be studied. The practice sessions for Day 1 and 2 were less successful in reducing anxiety. Day 3 practice session was about equally helpful in all three areas.

The results of this study do not provide any evidence that the FLEX predictions and practice sessions do indeed have any systematic effect upon how students perform on the FLEX. The results do make quite clear that the students believe that both of these components of the counseling program are valuable and helpful and should be continued.

## References

April, EW (1982) Pretest for Physicians Preparing for the Federation Licensing Examination. New York: McGraw-Hill.

Cason, GJ and Schoultz, TW (1984) Counseling medical students preparing for their licensure examination: An illustration of the use of regression analysis. Abstract in Resources in Education, August. Full document available from Educational Resources Information Clearinghouse (ERIC), Document Reproduction Service: ERIC Document No. ED-242-773).

Table 1. Student Concern About Taking the FLEX and Helpfulness of FLEX Predictions

| | f | % | Mean/ Max | S.D. |
|---|---|---|---|---|
| Concern about Performance on FLEX (Prior to receiving predictions) | | | | |
| 5. Very concerned | 24 | 23 | 3.61/5 | 1.22 |
| 4. Somewhat concerned | 47 | 45 | | |
| 3. Neither | 13 | 12 | | |
| 2. Somewhat unconcerned | 11 | 11 | | |
| 1. Very unconcerned | 10 | 10 | | |
| Helpfulness of predictions in: | | | | |
| Deciding how much to study | | | | |
| 5. Very helpful | 12 | 11 | 3.39/5 | 1.00 |
| 4. Somewhat helpful | 38 | 36 | | |
| 3. Neither | 40 | 38 | | |
| 2. Somewhat unhelpful | 9 | 9 | | |
| 1. Very unhelpful | 6 | 6 | | |
| Deciding what to study | | | | |
| 5. Very helpful | 4 | 4 | 3.00/5 | .91 |
| 4. Somewhat helpful | 20 | 19 | | |
| 3. Neither | 64 | 61 | | |
| 2. Somewhat unhelpful | 6 | 6 | | |
| 1. Very unhelpful | 11 | 11 | | |
| Reducing concern, anxiety | | | | |
| 5. Very helpful | 19 | 18 | 3.77/5 | .96 |
| 4. Somewhat helpful | 58 | 55 | | |
| 3. Neither | 18 | 17 | | |
| 2. Somewhat unhelpful | 5 | 5 | | |
| 1. Very unhelpful | 5 | 5 | | |
| Continue FLEX predictions | | | | |
| 3. Yes | 79 | 89 | 2.73/3 | .53 |
| 2. Uncertain | 6 | 7 | | |
| 1. No | 4 | 4 | | |

Table 2. Helpfulness of FLEX Practice Sessions

| | Day 1 N=31 | | Day 2 N=34 | | Day 3 N=68 | |
|---|---|---|---|---|---|---|
| How much to study | Mean=4.06 SD= .89 | | Mean=4.12 SD= .88 | | Mean=4.13 SD= .90 | |
| 5. Very helpful | 10 | 33 | 12 | 35 | 28 | 41 |
| 4. Somewhat helpful | 15 | 48 | 16 | 47 | 25 | 37 |
| 3. Neither | 5 | 16 | 5 | 15 | 11 | 16 |
| 2. Somewhat unhelpful | 0 | 00 | 0 | 0 | 4 | 6 |
| 1. Very unhelpful | 1 | 3 | 1 | 3 | 0 | 0 |
| What to study | Mean=3.94 SD= .77 | | Mean=3.91 SD= .79 | | Mean=3.83 SD=.94 | |
| 5. Very helpful | 7 | 23 | 8 | 24 | 17 | 25 |
| 4. Somewhat helpful | 16 | 52 | 16 | 47 | 25 | 37 |
| 3. Neither | 7 | 23 | 9 | 26 | 21 | 29 |
| 2. Somewhat unhelpful | 1 | 3 | 1 | 3 | 2 | 3 |
| 1. Very unhelpful | 0 | 0 | 0 | 0 | 1 | 1 |
| Reducing concern, anxiety | Mean=3.40 SD=1.12 | | Mean=3.59 SD=1.02 | | Mean=3.95 SD=1.00 | |
| 5. Very helpful | 5 | 16 | 6 | 17 | 21 | 31 |
| 4. Somewhat helpful | 10 | 32 | 14 | 41 | 29 | 47 |
| 3. Neither | 10 | 32 | 9 | 26 | 10 | 15 |
| 2. Somewhat unhelpful | 4 | 13 | 4 | 12 | 4 | 6 |
| 1. Very unhelpful | 2 | 6 | 1 | 3 | 2 | 3 |
| Continue FLEX Practice Sessions | Mean=2.98 SD= .32 | | | | | |
| 3. Yes | 64 | 85 | | | | |
| 2. Uncertain | 8 | 11 | | | | |
| 1. No | 3 | 4 | | | | |

Table 3. Means and Standard Deviations of Third Year Medical School Cumulative GPAs; and, Predicted FLEX Scores for Survey Respondents Providing or Not Providing Their Names

| | Respondents Providing Their Names | Respondents Not Providing Their Names |
|---|---|---|
| GPA | | |
| Mean | 2.68 | 2.43 |
| S.D. | .58 | .49 |
| Predictions for FLEX | | |
| Day 1 | | |
| Mean | 78.40 | 76.65 |
| S.D. | 3.46 | 2.74 |
| Day 2 | | |
| Mean | 83.44 | 81.93 |
| S.D. | 2.85 | 2.60 |
| Day 3 | | |
| Mean | 82.98 | 82.03 |
| S.D. | 1.96 | 1.89 |
| Total | | |
| Mean | 82.20 | 81.00 |
| S.D. | 2.38 | 2.22 |

Table 4. Correlations between Providing Name and Response to Survey Items (N=105)

| Questionnaire Item | r | p |
|---|---|---|
| 1 | -.40 | .00 |
| 3 | -.03 | .38 |
| 4 | .14 | .08 |
| 5 | .22 | .01 |
| 6 | .11 | .14 |
| 7 | -.19 | .03 |
| 8A | -.11 | .13 |
| 8B | .03 | .39 |
| 8C | -.20 | .01 |
| 9 | -.05 | .40 |
| 10 | .13 | .24 |
| 11 | -.01 | .48 |
| 12 | .25 | .08 |
| 13 | .24 | .09 |
| 14 | .18 | .07 |
| 15 | -.26 | .08 |
| 16 | .03 | .43 |
| 17 | -.12 | .18 |
| 18 | .20 | .05 |
| 20 | .14 | .08 |

Original was photo-reduced to front and back of single sheet.

Senior Medical Students' Evaluation of FLEX Predictions and FLEX Practice Sessions
March 13, 1985

Since academic year 1979-80, Seniors have been provided statistical predictions of their probable scores on the FLEX. For those wishing to participate, voluntary practice FLEX sessions have been provided. Resources to assist students are limited. We need your help deciding what part or parts of this program should be expanded, retained, revised, curtailed, or deleted. Your answers will be treated confidentially and may be anonymous if you wish. Any published reports will contain only anonymous or group data (e.g., averages). Return of this questionnaire indicates your consent for us to use your answers in this manner. Please record your answers on this questionnaire. Complete during class meeting, fold in half (to to bottom), and give to Dr. Ture Schoultz.

Thank you for your co-operation.
Ture Schoultz, Ph.D., Carolyn Cason, Ph.D., & Gerald Cason, Ph.D.

Name (Optional) : ----------

(Providing your name is optional, but it would help us analyze the strengths and weaknesses of the program if we could connect your answers with your predicted and actual FLEX scores.)

1. At the beginning of your Senior year (before receiving your predicted FLEX scores or participating in the practice sessions), how concerned, uneasy or anxious were you about how you might score on the FLEX?

a. Very concerned
b. Somewhat concerned
c. Neither concerned nor unconcerned
d. Somewhat unconcerned
e. Very unconcerned

2. Did you receive a 'tear sheet' with predictions of your FLEX Day 1, Day 2, Day 3, and Total score; and, probability of passing the FLEX?

a. YES, Go to Question 3.
b. NO; Go to Question 7.

3. How helpful were the FLEX predictions in helping you decide HOW MUCH you should study to prepare for the FLEX?

a. Very helpful
b. Somewhat helpful
c. Neither helpful or harmful
d. Somewhat unhelpful
e. Very unhelpful

4. How helpful were the FLEX predictions in helping you decide WHAT you should study to prepare for the FLEX?

a. Very helpful
b. Somewhat helpful
c. Neither helpful or harmful
d. Somewhat unhelpful
e. Very unhelpful

5. How helpful were the FLEX predictions in reducing any concern, uneasiness, or anxiety you may have had about how you might score on the FLEX?

a. Very helpful
b. Somewhat helpful
c. Neither helpful nor harmful
d. Somewhat unhelpful
e. Very unhelpful

6. On the whole, do you think FLEX predictions should continue to be given to Seniors?

a. YES, definitely
b. Uncertain or don't know
c. NO, definitely not.

7. Did you participate in ANY of the FLEX practice sessions?

a. YES, Go to Question 8.
b. NO, Go to Question 19 (on back of this page).

8. Which session(s) did you attend? (Check or circle each attended.)

   a. ———Day 1 (Basic Science) practice session
   b. ———Day 2 (Clinical Science) practice session
   c. ———Day 3 (Patient Management Problems) practice session

Using the scale below, indicate on the line provided how helpful each session you attended was in your deciding HOW MUCH you should study to prepare for the FLEX:

   a. Very helpful
   b. Somewhat helpful
   c. Neither helpful nor harmful
   d. Somewhat unhelpful
   e. Very unhelpful
   x. Did not attend the session

9. ———Day 1 (Basic Science) practice session

10. ———Day 2 (Clinical Science) practice session

11. ———Day 3 (Patient Management Problems) practice session

CONTINUED ON BACK OF PAGE >>>>>>>>————————————————————>>

Using the scale below, indicate on the line provided how helpful each session you attended was in your deciding WHAT you should study to prepare for the FLEX:

a. Very helpful
b. Somewhat helpful
c. Neither helpful nor harmful
d. Somewhat unhelpful
e. Very unhelpful
x. Did not attend the session

12. ———Day 1 (Basic Science) practice session

13. ———Day 2 (Clinical Science) practice session

14. ———Day 3 (Patient Management Problems) practice session

Using the scale below, indicate on the line provided how helpful each practice session you attended was in reducing any concern, uneasiness, or anxiety you may have had about how you might score on the FLEX:

a. Very helpful
b. Somewhat helpful
c. Neither helpful nor harmful
d. Somewhat unhelpful
e. Very unhelpful
x. Did not attend the session

15. ———Day 1 (Basic Science) practice session

16. ———Day 2 (Clinical Science) practice session

17. ———Day 3 (Patient Management Problems) practice session

18. On the whole, do you think the FLEX practice sessions should be continued?

a. YES, definitely
b. Uncertain or don't know
c. NO, definitely not.

Appendix

19. Considering both the FLEX predictions and practice sessions:

A. What was best? What should be retained or expanded?

B. What was worst? What should be curtailed or deleted?

C. What other changes or improvements would you suggest?

D. What materials, if any, did you find most useful for review? Review of what?

20. Please estimate the total time and period over which you were actively engaged in systematic review or other preparation for the FLEX (other than the practice sessions).

Average of hours per week between (dates) and

OR

Average of hours per month from (dates) to

for a total of about hours.

Please feel free to make any other comments you wish to make in the space below.

THANK YOU FOR YOUR COOPERATION. BEST WISHES FOR A REWARDING AND SATISFYING CAREER IN MEDICINE. (3/7/85, File:FLEX.RNO[2224,2200])